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ABSTRACT

This paper synthesizes research on vocabulary learning and vocabulary instruction to provide teachers with a basis for using different techniques of vocabulary instruction to improve reading comprehension. The limitations of traditional definition and context-based instruction are discussed in the paper, and principles are outlined which explain why, how, and when teachers can use more intensive vocabulary activities effectively. The paper does not just present specific new techniques for instruction, but also describes how approaches to vocabulary instruction such as integration, repetition, and meaningful use of words contribute to reading comprehension. The information furnished in this paper is intended to provide teachers with a basis for making use of, and effectively adapting, a range of different instructional techniques. The paper argues that large scale vocabulary growth comes about through a combination of instruction, incidental encounters with words, and sheer volume of reading. Four figures are included, and 45 references are attached. (RS)

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VOCABULARY INSTRUCTION AND READING COMPREHENSION

William E. Nagy
University of Illinois at Urbana-Champaign

August 1988

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University of Illinois at Urbana-Champaign
51 Gerty Drive
Champaign, Illinois 61820

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Abstract

Research on vocabulary learning and vocabulary instruction is synthesized. Limitations of traditional definition-and context-based instruction are discussed, and principles are outlined which explain why, how, and when teachers can use more intensive vocabulary activities effectively.

VOCABULARY INSTRUCTION AND READING COMPREHENSION

Vocabulary knowledge is fundamental to reading comprehension; one can't understand text without knowing what most of the words mean. A wealth of research has documented the strength of the relationship between vocabulary and comprehension. The proportion of difficult words in a text is the single most powerful predictor of text difficulty, and a reader's general vocabulary knowledge is the single best predictor of how well that reader can understand text (Anderson & Freebody, 1981).

Increasing vocabulary knowledge is a fundamental part of the process of education, both as a means and as an end. Lack of adequate vocabulary knowledge is already an obvious and serious obstacle for many students, and the number of such students can be expected to rise as an increasing proportion of our students fall into categories considered educationally at risk. At the same time, advances in knowledge will create an ever-larger pool of concepts and words that a person must master to be literate and employable.

The obviousness of the need and the strong relationship between vocabulary and comprehension invite an overly simplistic response: if we simply teach students more words, they will understand text better. However, not all vocabulary instruction increases reading comprehension. In fact, according to several studies, many widely used methods of vocabulary instruction generally fail to increase reading comprehension (Mezynski, 1983; Pearson & Gallagher, 1983; Stahl & Fairbanks, 1986).

Let me present the point in another way. Imagine an experiment with two groups of students about to read a selection from a textbook. One group is given typical instruction on the meanings of some difficult words from that selection; the other group doesn't receive any instruction. Then both groups are given the passage to read, and tested for comprehension. Do the students who received the vocabulary instruction do any better on the comprehension test? Very often, they don't.

This news (if it is news) should be unsettling. A major motivation for vocabulary instruction is to help students understand material they are about to read. If traditional instruction is not having this effect, teachers should know why not, and what to do about it.

The purpose of this report, then, is to lay out, on the basis of the best available research, how one can use vocabulary instruction most effectively to improve reading comprehension. The term "vocabulary" will be used primarily for *reading* vocabulary; it should therefore be noted that the discussion will be relevant primarily to students already past the initial stages of reading, for whom learning new words means acquiring new meanings, and not just learning to recognize in print words already a part of their oral vocabulary.

Although the focus is on improving reading comprehension, some connections will be made to other aspects of instruction, linking vocabulary instruction and reading comprehension with broader goals of the language arts program.

Examples of useful approaches to vocabulary instruction--mainly, but not exclusively prereading activities--will be presented for use or adaptation by classroom teachers. The primary purpose, however, is not to provide a smorgasbord of activities, but to provide the teacher with a knowledge of how and why one can choose and adapt vocabulary-related activities to maximize their effectiveness.

Reasons for Failure of Vocabulary Instruction

Why does much vocabulary instruction often fail to increase comprehension measurably? There are two basic ways to account for this failure. The first is that most vocabulary instruction fails to produce in-depth word knowledge. A number of studies indicate that reading comprehension requires a high level of word knowledge--higher than the level achieved by many types of vocabulary instruction. Only

those methods that go beyond providing partial knowledge and produce in-depth knowledge of the words taught will reliably increase readers' comprehension of texts containing those words. The implication is that teachers should augment traditional methods of instruction such as memorizing definitions with more intensive instruction aimed at producing richer, deeper word knowledge.

A second reason for the failure of vocabulary instruction to improve reading comprehension measurably relates to the comprehensibility of texts containing unfamiliar words. One doesn't need to know every word in a text to understand it. In one study, it was found that one content word in six could be replaced by a more difficult synonym without significantly decreasing comprehension of a text (Freebody & Anderson, 1983).

Hence, redundancy of text also provides an explanation for the failure of vocabulary instruction to improve comprehension. If the presence of a certain proportion of unfamiliar words does not measurably hinder comprehension, instruction on these words would not measurably improve it. In fact, inferring the meanings of unfamiliar words in text is itself a major avenue of vocabulary growth (Nagy, Anderson, & Herman, 1987; Nagy, Herman, & Anderson, 1985). The implication is that what is needed to produce vocabulary growth is not more vocabulary instruction, but more reading.

These two accounts of the failure of some vocabulary instruction to improve comprehension appear to have almost contradictory implications for instruction. Yet the two are not mutually exclusive; they give complementary perspectives on the complex relationship that exists between vocabulary knowledge and reading comprehension. After presenting each perspective and its instructional implications in detail, I will attempt to outline a synthesis of the two, along with recommendations for instruction that follow from this synthesis.

Partial Word Knowledge

The Need for In-Depth Word Knowledge

The first reason given why vocabulary instruction often fails to produce measurable gains in reading comprehension is that much instruction fails to produce a sufficient depth of word knowledge. There are degrees of word knowledge, ranging from "I think I've seen that word before" to "That's what I did my dissertation on." But how what depth of word knowledge should teachers try to impart to their students? How well do readers have to know words in order for it to benefit them in their reading?

This question can be answered in part by looking at studies that have tried to increase reading comprehension through vocabulary instruction. The level of word knowledge required for comprehension is shown by the types of vocabulary instruction that succeed or fail to produce gains in comprehension.

From the published research on vocabulary instruction, we can piece together a fairly consistent picture of the effectiveness of different types of instruction in increasing reading comprehension. For the following synthesis of this research, I will draw most heavily on McKeown, Beck, Omanson, and Pople (1985), Mezynski (1983), Pearson and Gallagher (1983), and Stahl and Fairbanks (1986). There are also a number of valuable articles on this topic in the April 1986 *Journal of Reading*, a special issue devoted to vocabulary instruction.

Problems of Traditional Methods of Vocabulary Instruction

Traditionally, much vocabulary instruction has involved the use of definitions--some combination of looking them up, writing them down, and memorizing them. Another commonly used method involves inferring the meaning of a new word from context. However, neither method, taken by itself, is especially effective at improving reading comprehension.

Definitional Approaches

Most vocabulary instruction involves some variety of a definitional approach--students learn definitions or synonyms for instructed words. There are obviously better and worse versions of this approach, and one should not conclude that definitions are not useful in vocabulary instruction. But definitions alone can bring a student to only a relatively superficial level of word knowledge. By itself, looking up words in a dictionary or memorizing definitions does not reliably improve reading comprehension.

The first problem with definitional methods of instruction is simply that many definitions simply aren't very good, as definitions. Here is a definition from a good school dictionary:

> MIRROR: Any surface that is capable of reflecting enough light without scattering it so that it shows an image of any object placed in front of it.

This definition may be accurate, but it is hard to imagine that anyone who doesn't already know the meaning of *mirror* could be helped by this definition. Most of the content words in the definition are less likely to be familiar to the student than the word mirror itself.

Here are some other definitions, taken from the glossary of a basal reader:

> SIPHON: To pull water from one place to another
>
> MIGRATION: Moving from one place to another
>
> IMAGE: likeness
>
> BALEEN: substance like horn that grows in plates in a whale's mouth and that is used to filter food from the water.

These definitions are simply not accurate--at least not for the readers who need to use them. Note for example that *likeness* is a relatively rare word--it occurs less than twice in a million words of text--whereas *image*, the word it is used to define, is far more frequent, occurring 23 times per million words of text (Carroll, Davies, & Richman, 1971). *Likeness* is also one of the few English words ending in -*ness* that is semantically irregular. As for the definition of *baleen*, the words *horn* and *plates* may be frequent enough, but they are being used with meanings that are probably not at all familiar to students.

Definitions given in glossaries are also not always appropriate to the selection being read. In one basal reader, for example, tragic is defined in the glossary as "very sad." The word *tragic* occurs in one selection in the following context (spoken by a blind boy walking through Pompeii): "Too bad! The tragic poet is ill again. It must be a bad fever this time, for they're trying to smoke fumes instead of medicine. I'm glad I'm not a tragic poet."

Even when definitions are accurate, they do not always contain adequate information to allow a person to use the word correctly. This is especially true of definitions for words for concepts with which the learner is unfamiliar. John Sheffelbine (1984) and others have used the following activity to communicate this point to teachers: Take some definition of words that represent truly unfamiliar concepts--such as those below--and try to do what students are often asked to do: "Write a sentence for each word in which it is used correctly." I suggest that readers take the time to actually try this activity, to experience the full force of the point: Definitions do not teach you how to USE a new word.

EPIPHENOMENAL: (adj) having the character of or relating to an epiphenomenon

EPIPHENOMENON: (n) A phenomenon that occurs with and seems to result from another

FORAMEN (pl. FORAMINA, FORAMENS): (n) a small opening, especially a natural one in a bone

FORAMINOUS: (adj) containing foramina

IDEATIONAL: (adj) related in some way to ideas or concepts, especially as they are in the formative stages

STATIVE: (adj) expressing a bodily or mental state

There are two reasons why it is difficult to write meaningful sentences, given only a definition. One is that definitions alone tell very little about how a word is actually used. This problem is especially acute for children, who are less able to use even that information that is available in definitions (Miller & Gildea, 1987).

Another reason why it is difficult to write a sentence for a truly unfamiliar word, given only the definition, is that definitions are not an effective device for conveying new concepts. One can think of it this way: Why isn't a glossary of biological terms an adequate substitute for a biology textbook? The answer, in part, is that there is important information about biological concepts and about how these concepts are interrelated that simply doesn't fit into definitions.

This brings us to perhaps the most basic reason why knowledge of definitions is not adequate to guarantee comprehension of text containing the words defined: Reading comprehension depends on a wealth of encyclopedic knowledge, and not merely on definitional knowledge of the words in the text.

Take, for example, a text in which a bat is seen flying around. Definitional features of *bat*--the fact that bats are mammals rather than birds, for example--may well be totally irrelevant and comprehending the text. Understanding the text may depend more on knowledge of bats, or knowledge of folklore about bats, that would not necessarily make it into a definition.

The point is not that definitions are never to be used in vocabulary instruction; on the contrary, they will play an essential role in most vocabulary instruction. However, definitions have substantial weaknesses and limitations as an instructional device. These weaknesses and limitations must be recognized, and corrected for. How this can be done will become clearer from the discussion of more intensive approaches to vocabulary instruction.

Contextual Approaches

Another common approach to teaching vocabulary is the use of context. A teacher might write a sentence or two on the board containing the word to be learned, and ask students to figure out what the word means. There is no question that learning from context is an important avenue of vocabulary growth, and that it deserves attention and practice in the classroom. But context, used as an instructional method by itself, is ineffective as a means of teaching new meanings, at least when compared to other forms of vocabulary instruction.

The problem is that, for the most part, a context may look quite helpful if one already knows what the word means, but it very seldom supplies adequate information for the person who has no other knowledge about the meaning of a word. For example, take a sentence such as the following, which was used to illustrate context clues involving contrast: "Although Mary was very thin, her sister was

obese." It is clear that contrast is involved, but the exact nature of the contrast is only clear to someone who already knows the meaning of *obese*. This becomes clear when one attempts to find other words that could be reasonably substituted in place of the word whose meaning is supposed to be inferred. There is no reason, for example, for a word in this position to refer to an extreme value on the scale; an author could easily have used the word *normal* in this context. Given only this sentence context, one can think of other words that relate to other possible implicit contrasts--for example, *charitable* (in her description of Mary), or *unconcerned* (about her health). Nor is there any reason to restrict guesses about the meaning of a new word to synonyms; one can imagine meanings expressed by phrases that would fit in this context, such as "not jealous."

It should be noted that this example involves the use of contrast, a relatively informative type of context clue. In most cases, what appears to be a fairly informative context would allow an even wider range of possible substitutions.

Natural and Instructional Contexts

One of the motivations for having students try to figure out word meanings from context is to help them develop word learning strategies that they can use on their own. Practice in such strategies should definitely be part of an approach to vocabulary building. However, the teacher must face up to the dilemma posed by any attempt to teach such strategies: Most contexts in normal text are relatively uninformative. The context around any unfamiliar word tells us something about its meaning, but very seldom does any single context give very complete information (Deighton, 1959; Shatz & Baldwin, 1986). More informative contexts can be constructed (cf. Gipe, 1979), but to the extent that they are informative, they are likely to be unnatural, and hence defeat the purpose of training students' strategies for inferring word meanings from real texts.

A good context might help a student figure out the meaning of a less familiar synonym for a known word, but a single context is in general not adequate to teach a new concept. If the goal is to teach students strategies, both teachers and students must accept partial word knowledge, some degree of uncertainty, and occasionally misleading contexts (Beck, McKeown, & McCaslin, 1983). If the goal is to get a good grasp on the meaning of a new word, one will have to use either highly artificial contexts, multiple contexts, or some other sort of supplemental information.

Combining Definitional and Contextual Approaches

A combination of definitional and contextual approaches is more effective than either in isolation: such mixed methods do, in general, increase reading comprehension (Stahl & Fairbanks, 1986). Indeed, it would be hard to justify a contextual approach in which the teacher did not finally provide an adequate definition of the word, or help the class arrive at one. Likewise, a good definitional approach will include sentences that illustrate the meaning and use of the words defined.

An example can often convey a meaning more vividly than a definition, and help students relate what may be a very abstract and general definition to their own experience. For example, one school dictionary defines one of the senses of *expand* as "to increase in one or more physical dimensions, as length or volume." A simple sentence such as "The balloon expanded as she blew air into it" might be helpful, perhaps even necessary, for the reader to make sense of such a general definition. It should be noted, of course, that it is the combination of definition and context that communicates the meaning effectively. The context alone--"The balloon _____ as she blew it up"--allows multiple interpretations: grew larger, burst, stretched, became taut, became more transparent, and so on.

Providing a natural context is almost always essential in teaching students how a word is used. Given only the definition of *cater* in the sense "to act with special consideration" (and even if the student somehow grasped the connotations of this sense of the word, which the definition does not adequately

convey), the student might produce a sentence such as "The mayor catered when the corporate executives visited the city."

Qualities of Effective Vocabulary Instruction

To be effective, then, vocabulary instruction must provide both adequate definitions and illustrations of how words are used in natural-sounding contexts. But does supplying both definitions and contexts guarantee gains in reading comprehension? Not necessarily. It would be safe to say that good definitions and contexts are a minimal requirement for good instruction, but they by no means exhaust what can be put into a good vocabulary lesson.

Methods of vocabulary instruction that are most effective at improving comprehension of text containing the instructed words go quite a bit beyond simply providing both definitions and contexts. Such methods could be referred to as "intensive vocabulary instruction." There are numerous approaches to vocabulary that fall under this heading. Rather than simply list them, I would like to try and identify some common properties or principles of effective vocabulary instruction. These principles should help teachers to generate and evaluate specific instructional techniques, and also to adapt methods of vocabulary instruction effectively to particular classroom situations. Sample classroom activities consistent with the principles will be provided as a concrete help for the teacher. A wide variety of additional vocabulary activities can be found in the April 1986 *Journal of Reading* special issue on vocabulary, or in Johnson and Pearson (1984).

Based on surveys of available research (cf. Stahl, 1986; Graves & Prenn, 1986; Carr & Wixson, 1986), three properties of vocabulary instruction effective in increasing reading comprehension can be identified: INTEGRATION, REPETITION, and MEANINGFUL USE. Each of these will be discussed in turn.

Integration

The first property of powerful vocabulary instruction is that it integrates instructed words with other knowledge. This emphasis in instruction is an outgrowth of schema theory. For our purposes here, the essence of schema theory lies in two points: (a) that knowledge is structured--it consists, not of lists of independent facts, but of sets of relationships, and (b) that we understand new information by relating it to what we already know.

Semantic Mapping

One classroom activity reflecting this emphasis has been called, among other things, "brainstorming," or "semantic mapping." This approach has been researched in some detail by Dale Johnson and his colleagues (e.g., Johnson, Toms-Bronowski, & Pittelman, 1982; see also Johnson & Pearson, 1984). Classroom applications of many uses of semantic maps (i.e., not just for vocabulary comprehension) are described in Heimlach and Pittelman (1986).

To focus on a vocabulary-related example, the teacher might choose one or more literary works related to a particular theme, such as "fear." (Or, given a particular story to be read, the teacher might identify a theme or topic central to that story.) In preparation, the teacher notes particular words in the selection relating to theme, including, but not necessarily limited to, difficult words.

The first step in classroom instruction resembles Kenneth Koch's (1980) language-generating games from Wishes, Lies, and Dreams: Teaching Children to Write Poetry. The teacher puts a word or phrase representing the basic theme on the board, then asks the students to write down (individually) any words they can think of related to this theme. Since the key word is "fear," students will think of words such as *terror, ghosts, monsters, goose pimples, scream,* etc.

Next, the teacher makes a composite class list on the board, grouping--or having the students group--the words into categories when possible, and helping the class agree on labels for the categories. The teacher can always prod students to think in new directions--for example, words about NOT being afraid--*brave, foolhardy,* etc. After the words have been categorized, the teacher can bring up any important words not suggested by the students, and ask students to try to place them in an appropriate category (Blachowitz, 1986). A map resulting from the process might resemble Figure 1.

[Insert Figure 1 about here.]

The teacher can lead a discussion of how new words relate to familiar words and concepts, and can ask students to relate stories about fears or frightening experiences that they or their friends or relatives have had. A rich vocabulary of words related to the theme of the selections to be studied has been generated, then, and the students have related the theme to their own experiences in the "personal narratives" discussion.

In terms of language theory and research, this procedure serves a number of purposes. First of all, it activates appropriate background knowledge, getting students to think about their experiences in their lives that relate to the theme. This may seem unnecessary, but it has been found that students often do not spontaneously bring the knowledge they possess to bear when reading, or when learning new words. Second, it allows the teacher to assess and identify the specific background knowledge possessed by the students in that class. The teacher can then make sure that new concepts and words are related to experiences meaningful to those particular students. Third, it provides a rich basis for further writing as well as reading. Consistent with what Hillocks (1986) has called the "environmental approach," the teacher has given focus to student interaction while encouraging fluent and elaborated discussion. In summary, subsequent reading, talking, and writing are enriched by the brainstorming, mapping, and verbalizations of understandings and experiences in the prereading activities.

There are obviously limitations to this approach to vocabulary instruction. Since it is designed for words that are related in some way, one clearly can't cover all the words that might need some sort of clarification in the selections to be read. (This is, in fact, a problem with many conceptually-based approaches to vocabulary instruction.) It is best, whenever possible, to teach words in meaning-based groups, but this isn't always easy for any given story. For example, the words listed for instruction in one teacher's manual for a text that included a story with the "fear" theme are: *ominously, quaking, tarpaulin, serene, compose* (as in *composure*), *hedge, louvered, oblong, ebony,* and *forearms*. One can't deal with all of these in a single semantic mapping session and discussion. But one can pick a few words that relate to a topic--in this case, words related to emotions, and especially fear (*ominously, quaking, serene, compose*). And in preparing for this lesson, additional semantically related words can be found to include in the instruction. Some might be found in the selection itself. In fact, the story under discussion contains a number of thematically-related words, several of which might be unfamiliar to some of the students: *courage, tremble, startle, awful, spooky, calm, shaking, excitement, terrified, amazed,* and *stunned*.

There is no reason why students cannot be involved in spotting words and phrases related to a story's theme. An exercise by Little (1986), for example, gives students responsibility for searching the first part of the text of O'Henry's "Gift of the Magi." As they do so, they get an initial sense of a theme of the story as well.

> Have your students list some words or phrases from the first 5 or 6 paragraphs that portray or give hints about Della and Jim's financial status. Then ask them to give a word or phrase that seems to them to describe accurately the financial condition of the young couple. (Some pertinent words and phrases in the text are: "One dollar and eighty-seven cents;" "shabby little couch;" "mendicancy squad;" "shrunk to twenty dollars;" "saving every penny." Students will offer different words to accurately say

how poor Della and Jim were. A few possibilities are *broke, penniless, impoverished, insolvent.*)

Of course, for some stories there might be so few words related to any one theme or topic that any attempt to treat words in meaning-based groups would seem unprofitable. But there is no reason to organize vocabulary instruction strictly on the basis of the vocabulary found in the selection. Whenever possible, additional words that are related to the theme and are also generally useful should be included, as well as any words from a story on a related theme that is going to be read in the near future. The glossary of a textbook can often aid in finding such words. For example, some other words in the glossary in the book containing the story about fear are *amazement, appalled, anxiously, cringe, resolutely, sinister,* and *suspense*. It would seem safe to assume that these occur in some other selections, and that any time spent on them would not be wasted.

Semantic mapping may seem to blur the distinction between "vocabulary" and other prereading activities aimed at helping students anticipate the general content or topic of the selection, activate relevant prior knowledge, and set a purpose for reading. It could be argued that this is actually a distinct advantage of semantic mapping. It can be tied in with other meaning-based approaches to prereading, such as discussion of personal experiences, role-playing activities, scenarios, case studies, and opinionnaires (Smagorinsky, McCann, & Kern, 1987).

Semantic Feature Analysis

Effective vocabulary instruction integrates new information with familiar information; semantic mapping and similar techniques illustrate ways this can be done. Effective vocabulary instruction also should establish connections among the instructed items. Any instructional method such as semantic mapping that deals with words in groups based on related meanings or relationship to a common topic should help develop knowledge of relationships among the words being taught. However, some methods of instruction go beyond semantic mapping in the extent to which they focus on and specify such relationships. Semantic feature analysis is one of the instructional methods that deals most explicitly with relationships among word meanings.

This method is described in detail in Johnson and Pearson (1984); see also Anders and Bos (1986) for a recent discussion. A sample lesson might go as follows.

First of all, this method probably works best for words which form a semantically close-knit group. An example would be the class of words including *house, mansion, shack, shed, barn, tent, bungalow, shanty,* and so on. Some of the words should be familiar to the class already, so that at least some of the distinctions in meaning to be made are immediately understandable to the class. These words are then used as labels for the rows in a two-dimensional matrix as in Figure 2.

The vertical columns are for the "semantic feature"--that is, phrases describing components of meaning shared by some of the words, or which distinguish a word from other meanings. In the square representing the intersection of a given word and a given semantic feature, one records whether (or to what extent) this feature applies to this word. For example, a mansion is for people, and is a permanent structure, and therefore gets pluses in the corresponding columns. The features themselves, and the pluses and minuses in the matrix, are arrived at through class discussion. Depending on the words and features involved, it may be necessary to use question marks or zeros for cases in which specific features don't seem to apply to some of the words, or for which their value is not defined.

This activity can be open-ended. For example, to the words in Figure 2 one could add additional related words such as *garage, hangar, silo, manse, igloo,* or *hogan*, or perhaps even some more distantly related words such as *hotel, skyscraper,* or *mall*. The inclusion of such words will necessitate finding additional features to discriminate among these meanings.

[Insert Figure 2 about here.]

The Venn Diagram (Figure 3) is another device that applies semantic feature analysis in the classroom. In Figure 3 the basic concepts for comparison are fable and fairy tale. The terms and phrases describing what these concepts have in common are in the intersection of the two circles, while the features peculiar to only one of the literary forms are in the unconnected segments of each circle. Note that all terms might be key instructed words in genre study, and the diagram can be used either in prereading or as an integrating followup activity. Proett and Gill (1986) suggest broader uses of Venn diagrams, extending to character analysis in teaching the novel.

[Insert Figure 3 about here.]

Hierarchical Arrays

Some meanings fall into hierarchical or taxonomic relationships. Names for organisms in biology are a prototypical example of this type of organization, but this type of meaning structure can fit other types of meanings as well. Figure 4 illustrates how some of the meanings in Figure 2 might be fit into a hierarchical structure.

[Insert Figure 4 about here.]

Linear Arrays

Linear arrays may be more appropriate for displaying other types of relationships among words. For example, there are many sets of words that differ essentially in degree, such as *annoyed, angry, enraged,* and *furious*, or *lukewarm, warm, hot, scalding*. The relationship among such words can be illustrated visually simply by arranging them in a line.

Students can be given the first two items in a sequence and asked to generate others, as in these examples:

sizeable, large, . . . (huge, tremendous, immense, etc.)

whispering, talking, . . . (shouting, yelling, hollering, or screaming)

ignore, allow, request, . . . (demand, insist, or order)

Sequences such as these can be based on intensity, size, chronology, and position (New Orleans Public Schools, 1972).

Whatever the particular structure used, comparing and contrasting related words is important for developing a greater sensitivity to meaings. For those sets of words that lend themselves to it, some sort of graphic representation of the relationships among meanings (such as have just been discussed) is probably helpful.

However, teachers can also help students explore relationships among words in less structured ways in classroom discussion. Fairly simple questions can be used to prompt students to look for relationships among instructed words. Such questions constituted one part of the rich vocabulary instruction explored by Beck and her colleagues (Beck, McCaslin, & McKeown, 1980; Beck, Perfetti, & McKeown, 1982; Beck, McKeown, & Omanson, 1987). In this program, the words being covered in any one week were all related to a common, broadly defined theme. With a set of words including *philanthropist, novice, virtuoso,* and *accomplice*, questions were posed concerning the relationships of these words, such as "Can a virtuoso be a novice? Is an accomplice likely to be a philanthropist? Can virtuoso be a philanthropist?"

Emphasis on Concepts

The techniques above illustrate a number of ways that classroom instruction can integrate instructed words with other concepts and knowledge. However, more important than any specific techniques is the recognition that vocabulary instruction, at least once the students are past the initial stages of reading, must bring them to understand new concepts.

In the early stages of reading, a major goal is getting children to recognize in print words they already know and use orally. At this point, elaborate instruction on word meanings is often unnecessary, since the children already know the meanings. But by third or fourth grade, if not sooner, children will begin to encounter increasingly large numbers of words in print that they have never encountered before, either in print or in oral language.

Even when the teacher has begun to deal with words that are new to students, there is the danger of treating these new words simply as new labels, rather than as new concepts. It is easy to fall into the trap of thinking of hard words only as fancy ways of saying things that could be said with short, familiar words. Near synonyms seem to make such convenient definitions--*altercation* means "fight" or "argument;" *obese* means "fat;" *ancient* means "old;" *serene* means "calm." Even vocabulary researchers sometimes wrongly assume that the meanings of new words can be adequately expressed in terms of a synonym or very brief phrase.

Synonyms and short definitions work well enough for some words; but overreliance on them reflects a rather dangerous oversimplification or misunderstanding of what learning vocabulary is about. Of course, one function of having a big vocabulary is to be able to impress people by using fancy words in place of simple ones. But the function of vocabulary that teachers should be more interested in promoting is the way new words enable us to conceive of and express new ideas. The primary goal of vocabulary instruction, therefore, at least after the initial stages of reading, is not to teach students new labels, but to teach them new concepts.

One way that vocabulary instruction can be structured to ensure a focus on concepts rather than labels is to start with instruction or discussion of the meaning of a word, without mentioning the word itself.

An example will make this clearer: The teacher might start discussing a word as follows: "Have you ever had the feeling that something was going to go wrong, or that something bad was going to happen? Not that you had any good reason to think that--just a sort of a feeling. Has anyone ever had such a feeling? Did something bad actually happen?" The teacher might be able to extend such a discussion for a minute or so before introducing the actual term: "Well, that sort of feeling is called a premonition."

Discussing the concept before one introduces the word may not always be the best way to teach new words; there may often be good reasons to mention a word before discussing its meaning. But it is certainly one legitimate approach to introducing new words, and one that forces the teacher and the class to treat new words as new concepts and not just new labels. Teaching concepts before labels may also help make vocabulary learning more interesting. Students are more likely to be motivated to remember the label for a concept they have begun to learn than to remember a new label in hopes that they will later find a use for it.

Another way to ensure that new words are dealt with as concepts and not just as labels is to consider examples and non-examples, and discuss why or why not the word applies in each case. For example, in the case of *premonition*, a teacher might give the case of someone who wakes up and remembers that they have to go to the dentist and get a filling that day. The teacher can ask the class how that person might feel, whether that feeling could properly be termed a premonition, and why or why not. Well-chosen examples and non-examples can illustrate important facets of the meaning of a new word. Students can also be asked to generate examples and non-examples, which will both tie in the new word

with familiar concepts and experiences, and bring to light possible misunderstandings. (For more detailed discussions of teaching concepts through use of examples and non-examples, see Klausmeier, Ghatala, & Frayer, 1974; Markle, 1975).

Repetition

The first property of effective vocabulary instruction was integration--tying in new words with familiar concepts and experiences. The second is REPETITION.

The need for repetition in word learning is related to what has been called the "verbal efficiency hypothesis" (Perfetti & Lesgold, 1979), or the "bottleneck hypothesis." According to this hypothesis, a reader has only limited processing capacity available for tasks that require conscious attention. If the reader can decode well, and knows all the words in the text very well, then identifying the words of the text can proceed more or less automatically and most of the reader's attention can be given to comprehension.

Reading with understanding depends, then, on low-level processes such as decoding and word recognition proceeding smoothly, without much conscious attention. Any interruption of the processes that are automatic for skilled readers can diminish comprehension. To take an extreme case, if a reader must struggle to decode the word *hippopotamus*, by the time that word has been recognized he or she may have forgotten what the rest of the sentence was about. Conversely, if this same reader had better skill in decoding, more attention could have been given to the meaning of the sentence.

According to the verbal efficiency hypothesis, limited knowledge of word meanings can have the same sort of detrimental effect on comprehension that poor decoding skills would have. Being able to identify or produce a correct definition for a word does not guarantee that one will remember its meaning quickly and effortlessly during reading. Therefore, vocabulary instruction must ensure not only that the reader knows what the word means, but that the reader has had sufficient practice with the word to make its meaning quickly and easily accessible during reading.

Perhaps the most important thing to stress about repetition is that it is necessary and worthwhile, at least for some words. The available research indicates that a number of encounters with a new word are necessary if one wants vocabulary instruction to have a measurable effect on reading comprehension (Stahl & Fairbanks, 1986; McKeown, et al., 1985).

How does a teacher provide multiple encounters with new words without instruction becoming boringly repetitive? The answer to this lies in the third property of effective vocabulary instruction, which I have labeled "meaningful use."

Meaningful Use

Effective vocabulary instruction helps the learner to use the instructed words meaningfully. One motivation for this property is simply that students learn more when they are actively involved. Another is what has been called "depth of processing." Simply stated, the more deeply you process some information, the more likely you are to remember it. In other words, vocabulary instruction which makes the student think about the meaning of a word, which demands that the learner do some meaningful processing of the word, will be more effective than instruction which does not. A third motivation for instruction which requires the learner to use the word meaningfully is, to put it plainly, that you get what you train for. There is a big difference between being able to say what a word means, and being able to use it. As we have seen already, knowing the definition of a word is often not enough to use the word properly. Conversely, there are many words that we use and understand quite well, without being able to define. (How many educated adults could formulate a good, non-circular definition of *if*?)

If one's goal is to enable students to parrot definitions, drill on definitions is probably the most appropriate instructional technique. But if students are expected to be able to deal with instructed words in context, the words must be encountered in context in instruction (McKeown, et al., 1985). And if students are expected to learn to use words meaningfully in reading or writing, then instruction must include meaningful use of the words. Effective vocabulary instruction requires students to process words meaningfully--that is, make inferences based on their meanings--and will include tasks that are at least in some ways parallel to normal speaking, reading and writing.

Instructional Activities that Elicit Inferences

Instructional activities can do this through questions that require the student to use the meaning of the word to make an inference, rather than just to state what the meaning is.

Compare the two versions of the multiple choice question below. The first asks the student to *identify* the meaning of *gendarme*; the second asks the student to *use* the meaning to make an inference. In this example, the difference between the two types of items has been made minimal, to focus on the essence of the difference.

Two versions of a multiple choice item

A. Identifying the meaning of a word

Gendarme means:

a) bellboy
b) policeman
c) waiter
d) letter carrier

B. Using the meaning of a word

A gendarme is most likely to carry:

a) a suitcase
b) a gun
c) a tray
d) the mail

In practice, of course, it would be even better to use a format which is much closer to the normal use of words in reading--for example, having the target word occur in a complete sentence, with a question which required using the meaning to make a more extended inference. This is illustrated well by one of the methods of assessing in-depth word knowledge used by McKeown, et al. (1985). In a sample item from their "context interpretation task," the student is given the sentence "When father heard that Lisa had ripped up the letter from Steve, father commended her for it," and then asked "What do you think father thought of Steve?

Other Activities Promoting Meaningful Use of Instructed Words

The intensive program of instruction outlined by Beck, et al. (1980) includes a number of activities that require students to use, and not just to state, the meanings of instructed words. One was a word-association activity, in which the teacher says a familiar word and the students are supposed to respond with the word among those being taught that is most closely related. Suppose the day's words were *virtuoso, philanthropist, accomplice,* and *novice,* and the teacher says "crook." Students would be expected to respond with the word *accomplice,* and to be able to defend their choice.

Another is an affective association activity. The teacher reads words one at a time, and students are supposed to respond with "yay" or "boo." Dissenting responses are accepted if they are justified adequately. Another activity is completion of sentences containing the target words, for example, "The accomplice was worried because . . ." The use of sentence completion, as opposed to the more open-ended task of "using this word in a sentence," helps steer students in the direction of sentences that really utilize the meaning of the word, instead of producing stereotyped answers like "I saw an X yesterday."

The exact nature of the task is not the issue, and any of these or similar tasks could be adapted for particular classrooms and particular types of words. What is important is that students be given practice at tasks which require them to use, rather than simply to state, the meanings of words they are learning. In at least some of these tasks, the instructed words should be embedded in natural sentence contexts.

Efficiency of Vocabulary Instruction

Up to now, we have been considering only one of the reasons why some vocabulary instruction fails to improve reading comprehension. Much available research indicates that it takes fairly intensive vocabulary instruction to guarantee measurable gains in reading comprehension. This is because readers must possess in-depth knowledge of a substantial portion of the words in a text before comprehension can proceed smoothly.

At this point, one might draw the conclusion that effective vocabulary instruction for comprehension would require the teachers to devote absurdly large amounts of time and energy to vocabulary instruction--covering every word in the selection that students might not know, with rich, intensive instruction that ties the words in with background knowledge, engages the students actively in meaningful processing, and doing all of this 10 or more times per word (see McKeown, et al., 1985). This conclusion presents the teacher with a dilemma--there does not appear to be enough time to bring students to the level of word knowledge that seems to be necessary for comprehending texts.

Fortunately, this bleak conclusion is based on incomplete information--on consideration of only one of the reasons why vocabulary instruction often fails to increase reading comprehension.

The Redundancy of Text

The arguments for intensive instruction were based on the fact that many types of vocabulary instruction have been found not to increase reading comprehension. Comprehension of text often requires much richer knowledge of a word than simple definitional knowledge. Another consideration, however, is the redundancy of text. The fact is that readers can tolerate a certain proportion of unknown words in text without comprehension being disrupted. If a certain amount of unknown words in a text will not decrease comprehension measurably, it stands to reason that teaching students the meaning of those words is not going to increase comprehension either. And if students can understand a text without any knowledge of some of the words, it follows that teachers need not give intensive instruction on ALL the words in the text.

How many unknown words can students tolerate in text? Freebody and Anderson (1983) found that replacing one content word in six with a difficult synonym did not reliably decrease comprehension of text by sixth graders; in other words, readers may be able to tolerate texts in which as many as 15% of the words are not fully known. The comprehensibility of cloze passages with 1-word-in-5 or 1-word-in-10 deletion patterns leads to a similar conclusion. The proportion of unfamiliar words that a reader normally encounters is likely to be lower. Reanalysis of data reported by Anderson and Freebody (1983) indicates that for the average fifth grader, about 3% of words in school texts would not be known at even a lenient criterion of word knowledge, and about 6% would not be known if a more stringent criterion was adopted.

Exactly what proportion of unknown words readers can tolerate depends on the nature of the text, the role of the unfamiliar words in the text, and the purpose for reading. In any case, however, it is not necessary for students to know *all* the words in a text in order to read it with a high level of comprehension. The teacher need not set the unrealistic goal of giving intensive instruction on every unfamiliar word in a text.

Incidental Word Learning

Another reason why intensive instruction is not necessary for every unfamiliar word in a text is that reading itself is a major avenue for learning the meanings of unfamiliar words. Very few people indeed have been subject to systematic intensive and prolonged vocabulary instruction of the sort that would guarantee gains in reading comprehension. Yet most of us have acquired fairly large reading vocabularies apart from, or above and beyond, any systematic attempts to learn or look up the meaning of words. How did we do it? Most children learn large numbers of words--at least a couple thousand per year (Nagy & Anderson, 1984). Yet only a small number, perhaps a few hundred, are covered in vocabulary lessons. How do they do it?

People learn words from a number of sources--from the speech of parents and peers, from classroom lectures and discussion, from television--and of course, from *reading*. After third grade, for those children who do read much, reading may be the single largest source of vocabulary growth. Fielding, Wilson, and Anderson (1986) found that outside reading was found to be the best predictor of vocabulary growth between grades 2 and 5.

As has already been mentioned, learning word meanings from context is somewhat ineffective. Most contexts don't tell the reader very much about the meaning of a word (Deighton, 1959; Beck, et al., 1983; Schatz & Baldwin, 1986). How, then, can one of the least effective means of vocabulary learning be the largest single source of vocabulary growth?

The answer appears to lie in sheer volume. In a recent study, Nagy, et al. (1987) measured incidental learning from context by students in third, fifth, and seventh grades. They found that students reading grade-level texts under fairly natural conditions had about a 1-in-20 chance of learning the meaning of any particular word from context. At first glance, this only confirms that learning from context is an ineffective method. And as far as short-term, instructional strategies are concerned, this is true.

However, the short term is not the whole picture. We estimate that the average fifth grader spends about 25 minutes a day reading, when reading both in and out of school are taken into account. Given this amount of reading, we estimate that a student will encounter about 20,000 new words a year. If 1 in 20 of these is learned from context, this would amount to a gain of about a thousand words per year, or over a third of the average child's annual vocabulary growth. If teachers could add another 25 minutes per day to a child's reading time, an additional thousand words could be learned a year. If high-quality texts appropriate for the child were chosen, this rate of learning could be substantially increased.

But what about the quality of word knowledge gained from context? To improve reading comprehension, children need in-depth, rich knowledge of words. What about the three properties essential to powerful vocabulary instruction--integration, repetition, and meaningful use? Does learning from context supply these?

A single encounter with a word in context obviously doesn't. This is why context isn't especially effective as a method of instruction. But regular, extensive reading can supply all the characteristics of powerful vocabulary instruction.

Consider the first property, integration--relating the meaning of the new word to the students' prior knowledge, and to other related concepts. If the reader is largely successful in comprehending the text containing the new word, then the new word *is* being tied in with the reader's prior knowledge; most of the words and the concepts in the text are already at least partly familiar. As for repetition, whether or not reading supplies this for a new word depends on how much the student is reading, and whether the new word is repeated. If the most important words for a student to learn are those that do occur repeatedly, reading will supply the necessary repetition. And of course, in reading one makes meaningful use of words. Reading is the best practice for reading.

Given that many people do develop in-depth knowledge of large numbers of words apart from much vocabulary instruction, wide reading must be able to produce the kind of word knowledge necessary for reading comprehension. Furthermore, given the number of words to be learned, and the number of encounters it takes to learn them thoroughly, it is clear that reading is necessarily the major avenue of large-scale vocabulary growth.

Efficiency in Vocabulary Instruction

So far, we have drawn two seemingly contradictory conclusions from the failure of some vocabulary instruction to improve reading comprehension. On the one hand, comprehension of text depends on knowledge much richer than simply knowing the definitions of words. In at least some cases, then, vocabulary instruction must be rich enough to really teach students new concepts, in a way that helps them relate new information to what they already know, and provides them with enough practice so that they can quickly and flexibly apply their knowledge of the instructed words in real reading. An extreme response to this point might be to devote the bulk of the school day to intensive vocabulary instruction.

On the other hand, comprehension of text does not require in-depth knowledge of every word in the text. Rather, reading itself is the major avenue of acquiring in-depth knowledge of words. An extreme response to this point would be to abandon vocabulary instruction altogether.

Of course, the contradiction is only apparent. The resolution lies in the teacher's ability to make efficient use of vocabulary instruction--to identify which words and concepts are likely to pose serious difficulties for the students, and to identify what type of difficulties these are, and what instructional remedies are most appropriate.

For students to achieve both the depth and breadth of vocabulary knowledge that they need to attain to become proficient adult readers, they must have many encounters with large numbers of words--encounters which help them to relate the word to their own prior knowledge and experiences, and which give them practice in using their growing knowledge of these words to make inferences. The experiences with words that lead to large-scale vocabulary growth come through both explicit instruction and incidental encounters with words in reading. A division of labor between instruction and incidental learning is clearly necessary.

Most growth in vocabulary knowledge must necessarily come through reading. There is no way that vocabulary instruction alone can provide students with enough experiences, with enough words to produce both the depth and breadth of vocabulary knowledge that they need to attain. So increasing the volume of students' reading is the single most important thing a teacher can do to promote large-scale vocabulary growth.

On the other hand, some vocabulary instruction is necessary. There are some cases in which context never seems to provide the crucial information--each of us can probably think of a dozen or so words we have encountered frequently while reading, without having gained any real understanding of their meaning. And there are some cases where comprehension of a text depends crucially on knowledge of specific words that may not be familiar to some students.

The teacher's goal must therefore be to find the optimal division of labor between incidental learning and explicit vocabulary instruction--to know how much time and energy to spend on teaching word meanings, and how much to depend on the students' ability to learn on their own.

What constitutes the best balance depends on the particular students, text, and words involved. It would be foolish to formulate any hard and fast rules here. But there are some principles which can help a teacher to get the best returns on time and energy devoted to vocabulary instruction. The key issue is to identify the specific type of difficulties posed by different words in the text, and adapting instruction to deal efficiently with them. More specifically, one needs to choose words very carefully for intensive instruction, and make strategic use of minimal instruction.

Choice of Words for Intensive Instruction

Intensive vocabulary instruction is needed to produce word knowledge of any depth. However, only a fraction of the potentially unfamiliar words in a story could be covered by such instruction, so it is necessary to decide when intensive instruction is really called for. What sort of words in a selection require this kind of attention?

Intensive instruction is most appropriate, first of all, for words that are conceptually difficult--that represent complex concepts which are not part of students' everyday experience. Second, such instruction usually depends on having a group of words that have related meanings (or at least, all relate to a single topic). Third, intensive instruction is most worthwhile when the words to be covered are important in two senses--important to the understanding of a selection, or important because of their general utility in the language. Intensive instruction is also called for if one wants students to incorporate the instructed words into their writing or speaking vocabularies (Duin & Graves, 1987).

There is one criterion I didn't mention that might be expected to be first on the list--one might think that intensive instruction is most necessary for those words that are least familiar to the students. It's true that familiarity of words to the students should play some role in the teacher's selection, but familiarity cannot be the primary criterion.

On the one hand, the words in a selection which are least familiar to the class may not be especially suited for intensive instruction--for example, they may be peripheral to the story, and not conceptually complex. Conversely, there may be some conceptually difficult words that are important to the selection and only superficially familiar to the students. Even if the students could quote a definition for such words, it doesn't necessarily follow that they know them well enough to comprehend the passage. Time might be better spend on words that are already partially known, if a deeper knowledge of these words is necessary for understanding the text, than on less familiar words not crucial to the story.

In determining where intensive instruction is most necessary, the single most important question is which words are conceptually difficult for the reader. Jenkins and Dixon (1983), Graves and Prenn (1986) and others have made it clear that it is essential to recognize different types of vocabulary learning situations for different words. Some words are in the students' oral vocabularies, and they only have to learn to decode them. Others represent new labels for familiar concepts. Others represent new concepts that must be learned. Traditional vocabulary instruction using only definitions or context is unlikely to enable students to learn concepts that are really new to them; it is this case in which intensive instruction is most needed.

When is a word conceptually difficult? *Superfluous* sounds like a hard word. It is long. But the concept it represents probably is not all that novel to many students. They may already know the word *unnecessary*. An example or so may be quite enough to tie the word *superfluous* in with experiences and concepts familiar to students.

Superconductor is difficult in a different sense. To understand it, one needs some grasp of several concepts relating to electricity, resistance, and so on. *Superconductor* is part of a whole system of technical concepts which would probably be unfamiliar to most students.

Can adults' ratings of the conceptual difficulty of a word tell us anything about how difficult students actually find these words? Nagy, et al. (1987) looked at the extent to which different properties of words influenced the probability that the meanings of these words would be learned from context during normal reading. Among several word properties considered was a rating of conceptual difficulty performed by two of the authors, one an experienced teacher. It was found that of the word properties considered, only rated conceptual difficulty influenced learning from context. Words at the highest level of conceptual difficulty were not learned during one reading of a text, even in expository texts which had as an explicit purpose teaching these very concepts. In fact, in texts with a high proportion of conceptually difficult words (this would include many expository texts and materials that include terms from a particular discipline or profession), there was relatively little incidental learning of new word meanings.

Difficult concepts can be acquired incidentally from text, but how well depends heavily on the quality of the text. Herman, Anderson, Pearson and Nagy (1987) were able to produce a substantial increase in the amount of incidental word learning from expository texts by making them more conceptually explicit--that is, by making relationships among concepts, and the relationships of new concepts to familiar concepts, clear in the text.

However, many texts read in school involve large numbers of technical terms and are not conceptually explicit. Definitions alone will not convey new concepts adequately. Intensive vocabulary instruction is especially useful when new and difficult concepts are under study. And while all aspects of intensive instruction are important for such concepts, integration--that is, tying the new concept in with familiar concepts and experience, and making the relationships among concepts clear--should be a major goal.

The conceptual difficulty of the whole text, and not just the conceptual difficulty of individual words, must be taken into account in determining when intensive vocabulary instruction is needed. A comparison of studies on the effects of vocabulary instruction on comprehension suggests that the greater the proportion of unfamiliar words in the text, the more intensive the instruction required to improve comprehension.

Strategic Use of Minimal Instruction

Intensive vocabulary instruction may be called for in the case of some words; but what does one do with the rest of them? The most important question to ask may be, "What words can I get by without teaching at all?" If one can find words that are not crucial to getting the gist of the story, it isn't absolutely necessary to teach them. Not that it wouldn't be nice for students to cover all the words in more depth; but there is only so much time, and ultimately, time spent in reading is what should be maximized. If some of the unfamiliar words in a selection occur in reasonably informative contexts, it might be profitable to save them for a post-reading activity in which students tried to infer their meanings from the surrounding text.

Efficient use of vocabulary instruction also depends on distinguishing the different types of difficulties that different words pose for readers. For some words, the primary problem may be decoding, rather than meaning; brief attention to the pronunciation of the word might be adequate in such cases.

As a general principle, it is valuable to have students hear or use a word being taught in natural sentence contexts. But even this principle has exceptions; I would rather have students spend a few seconds looking at a picture of an armadillo than have them practice using the word *armadillo* in a

sentence. Conversely, for words with derivational suffixes, like *argument* or *decision*, an example of how the word is used in a sentence may convey the meaning more quickly than either a picture or definition could.

Then there may be some words for which a definition is adequate. Teachers should remain profoundly distrustful of definitions, for reasons already discussed. However, if a word is at least peripheral to the theme of the selection being read, and is not conceptually complex, and if a definition is available that is accurate and explains the meaning in terms of words and concepts familiar to the reader, learning the definition may give the student a good start at learning the word. In-depth knowledge of the word will, of course, come only with multiple meaningful encounters, and these will come with regular reading.

For children to learn large numbers of words, they need to be exposed to them. Teachers should include as rich a vocabulary as they can in their own speech without losing the students. There are numerous and varied ways to make the classroom a vocabulary-rich environment, without making vocabulary a chore.

Promoting Independent Word Learning

There are more words to be learned than can be covered in even the most ambitious program of vocabulary instruction, and there is more to be learned about each word than can be covered in even the most intensive instruction. To promote large-scale, long-term vocabulary growth, teachers must aim at increasing students' incidental word learning.

Students must be given as much opportunity as possible for incidental word learning. This means increased time spent actually reading; I want to stress that the single most important thing a teacher can do to promote vocabulary growth is to increase students' volume of reading. Increasing out-of-school reading is important; but one must also be careful that preparation for reading (including vocabulary instruction) does not steal too much time from reading itself. It should also be kept in mind that any activity which increases reading comprehension, if coupled with the opportunity to read, will also result in vocabulary growth.

There are also ways in which students can be helped specifically to become better independent word learners, so that they get more benefit out of whatever reading they do. Unfortunately, it is beyond the scope of this book to treat this topic in the depth it deserves. One problem is that research documenting which methods of instruction actually increase independent word learning has simply not yet been done. I will, however, offer some brief suggestions as to ways I think independent word learning can be increased.

Two widely-used methods of helping students learn to deal with unfamiliar words on their own are context and word structure analysis. There is no doubt that skilled word learners use context, and their knowledge of prefixes, roots, and suffixes, to deal effectively with new words. I see two primary ways in which instruction in both these areas can be made more effective:

First of all, the teacher should take care to teach these as strategies--modelling for students how knowledge of context and word parts can help the reader deal with unfamiliar words encountered while reading, and giving them ample opportunity for guided practice using these strategies with realistic examples. Although learning word meanings from context is a "natural" way to learn vocabulary, it cannot be assumed that younger or less-able students are proficient at it (cf. McKeown, 1985).

Second, it is necessary for teachers to be aware, and to make their students aware, of the limitations of these methods. Contexts often give only partial, if not misleading, clues to the meaning of a new word. And contrary to the impression one gets from some advocates of word structure analysis, knowing that

abs means "away from" and *tract* means "to draw, pull" is not likely to help a student encountering the word *abstract* for the first time.

Much more research is necessary in order to determine how best to teach use of context clues and word structure analysis. But in the meantime, there is much that teachers can do to help students become better word learners. Most of all, I think recognizing that explicit vocabulary instruction can only cover a fraction of the words students need to learn can help teachers approach vocabulary instruction in ways that will increase independent learning.

The use of dictionaries is one example. Having students look up definitions is not especially effective at producing in-depth word knowledge; besides, students find it pretty boring. On the other hand, ability to use a dictionary is an important skill, and looking through dictionaries can be fascinating. Knowing this, a teacher can minimize copying definitions, and other such activities that might lead to a lifelong dislike for learning words, and instead maximize activities treating dictionary use as a skill to be mastered.

Realizing that only a fraction of the words students must learn can be covered also changes the way a teacher might evaluate the cost of more intensive vocabulary instruction. First of all, only if one feels free from the obligation to teach about every potentially unfamiliar word in a selection is there enough time to treat any of the words in depth. Even then, more intensive vocabulary instruction appears relatively expensive both in terms of preparation time and classroom time. But more intensive instruction, if done well, is also far more interesting than memorizing definitions. For example, low-income urban fourth graders, after five months of the intensive vocabulary instruction implemented by Beck and her colleagues (Beck, et al., 1980), were disappointed when the program was over and asked for more. During the program, students participated actively, and were found to be both noticing and using the instructed words outside of the vocabulary lessons. There may well be substantial long-term gains in vocabulary growth from the higher levels of interest and motivation produced by intensive instruction.

Conclusion

The purpose of this report has been not to present specific new techniques of vocabulary instruction, but to describe how different approaches to vocabulary contribute to reading comprehension. It is hoped that this information will provide teachers with a basis for making use, and effective adaptations, of different instructional techniques, as well as motivation to sometimes use methods of instruction that appear to have a greater initial cost.

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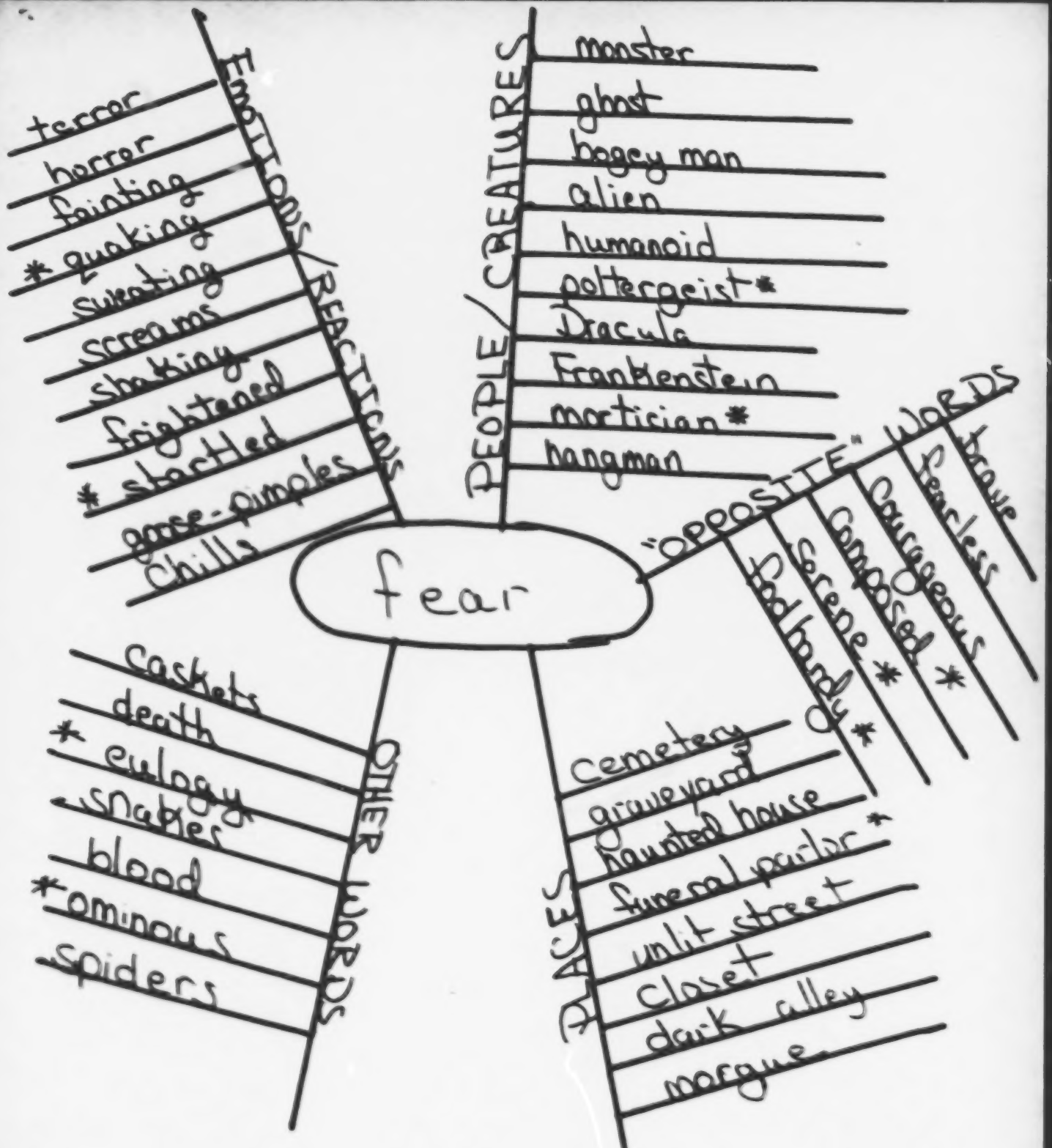

*words introduced by the teacher

Figure 1 - Semantic Map

Figure 2

Partial semantic feature matrix for "shelters"

	for people	for animals	for storage	big/fancy	small	crude/rough	permanent	portable		
house	+	−	−	0	0	0	+	−		
shack	+	−	−	−	+	+	?	−		
shed	−	−	+	−	+	+	?	−		
barn	−	+	0	−	−	0	+	−		
tent	+	−	−	−	0	0	−	+		
mansion	+	−	−	+	−	−	+	−		
...										

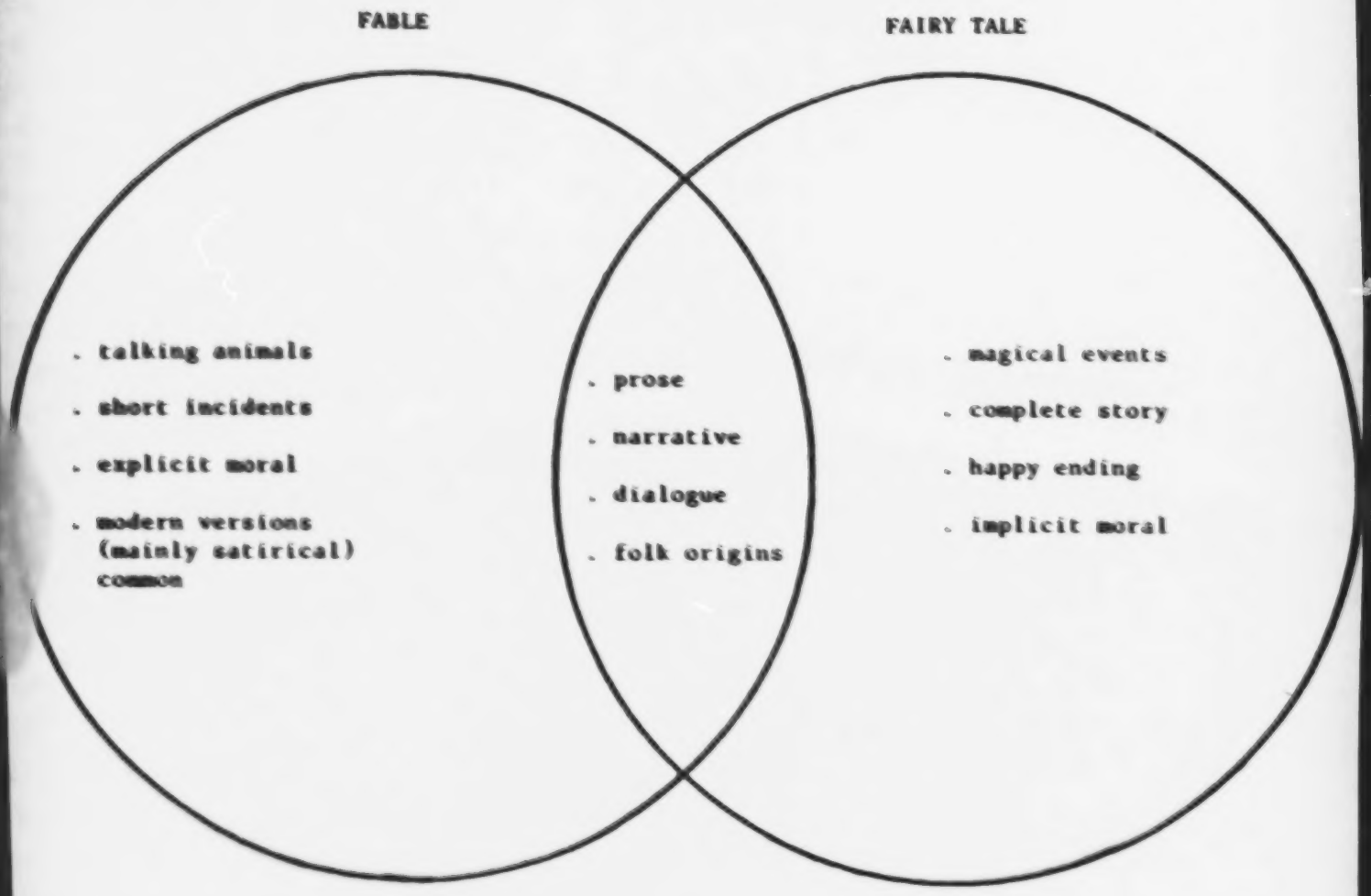

Figure 3 -- Venn Diagram

Figure 4

Hierarchical representation of relationships among word meanings